

Participation of Low-Income Urban Women in a Public Health Birth Control Program

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THE BIRTH CONTROL program of the District of Columbia Department of Public Health—now the District of Columbia Health Services Administration—was started on a limited basis in April 1964. Congress appropriated \$25,000 for serving 2,500 medically indigent women. In subsequent years additional funds were made available, and the program was opened to all women who had previous deliveries.

To plan for more effective administration of the program, the department undertook an evaluation study, financed in part by a grant from the Population Council. Several objectives were to determine the extent of continuing participation in the program, the reduction in births, and why some women became dropouts from birth control. The study population consisted of nonwhite mothers delivering a live infant at the department-operated D.C. General Hospital between November 1964 and December 1965. Almost one-third of all newborns in the District are delivered annually at this hospital, almost entirely to women from low-income Negro families.

After delivery, each mother was given birth control pamphlets or was visited at bedside by a

Planned Parenthood volunteer. She was invited to attend a Planned Parenthood film, followed by a demonstration and discussion of the various types of contraceptives.

When the mother was discharged from the hospital, she was given an appointment, usually within 6 to 8 weeks, to a post partum clinic. She also was given a 2 months' supply of foam and literature on various contraceptive methods. If the mother kept the appointment, she was asked again if she was interested in birth control and was invited to register in the department's program.

When the mother registered she was offered a choice of six birth control methods: pill, foam, diaphragm, rhythm, jelly, or intrauterine device (IUD). The department offered the IUD first in November 1965 (1). Most frequently she selected the oral contraceptive pill.

Design of the Study

All live birth deliveries to nonwhite mothers occurring between November 1964 and December 1965 at D.C. General Hospital were listed by certificate number order. Then a systematic 20 percent sample was drawn; that is, every fifth resident on the list was noted. A total of 1,200 mothers was selected in this way. These mothers' names were checked against records of the administration's bureau of maternal and child health to determine who had enrolled in

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the birth control program within 4 months after delivery. Those who had enrolled were considered to be participants.

Each participant was matched with a non-participant; that is, a woman who did not register at a D.C. birth control clinic within 4 months after delivery but who delivered in the same hospital during the same month and was within the same age, parity, and marital status group. (Parity was determined by the live birth order of the child, and marital status was inferred from the legitimacy item on the birth certificate.)

There were 680 women in the 20 percent sample who registered at the birth control clinic. Of this number 564 were interviewed between October 1966 and March 1968, and the results of their experiences were summarized. The remaining 116 were not interviewed for the following reasons: 36 moved from the District of Columbia, 31 could not be located, four died (causes not recorded), five refused to be interviewed, 29 interviews were not completed, and 11 were not interviewed for other reasons. These 116 women had the same distribution with respect to marital status, age, and parity as the women included. We believe that omitting the 116 did not significantly affect the study results.

Distribution of the sample population by age, parity, marital status at birth of study baby, and education are given in table 1; 22 years was the median age, 3 children comprised median parity, and 10th was the median grade completed.

Forty-five percent of the study population was married, and 42 percent had never been married when the study baby was born. One-fifth of the married and three-fifths of the never married were under 20 years old (table 2).

Status of Participant When Interviewed

At the time of the interview, which usually was almost 2 years after the mother had registered at the birth control clinic, 376 (67 percent) of the 564 participants were using contraceptives, 158 (28 percent) had at some time used contraceptives but were not currently using them, and 30 (5 percent) had never used any method of contraception (table 3).

Of the women using contraceptives at the time of the interview, 297 reported using them

Table 1. Age group, parity, and marital status of mother when study baby was born, and education at time of interview

Characteristics	Number	Percent
Total women.....	564	100.0
Age group (years):		
10-14.....	11	2.0
15-19.....	192	34.0
20-24.....	173	30.7
25-29.....	101	17.9
30-34.....	53	9.4
35-39.....	27	4.8
40-44.....	6	1.0
45 and over.....	1	.2
Parity:		
1.....	143	25.3
2.....	119	21.1
3.....	92	16.3
4.....	63	11.2
5 and more.....	147	26.1
Marital status:		
Married.....	252	44.7
Separated.....	67	11.9
Divorced.....	4	.7
Widowed.....	4	.7
Never married.....	237	42.0
Education (grade):		
Less than 6.....	6	1.0
6-8.....	68	12.0
9-11.....	341	60.5
12.....	147	26.1
Not stated.....	2	.4

faithfully between the time of registration at the clinic and the interview. The remaining 79 women had started from 1 to 17 months preceding the interview.

The 158 women who no longer were using birth control methods had stopped for such reasons as being pregnant or because they were separated from their husbands, had surgery, became sick, gained weight, were nervous, or thought it too much trouble. A few women had heard the pills were harmful and had stopped taking them, some had no time to get to the clinic because clinic hours coincided with working hours, and others could not obtain babysitters. Only one woman admitted losing track of the cycle.

Almost half of the 30 women who had never used contraceptives, although registered at the birth control clinic, reported that they did not need them because of a tube ligation, a hysterectomy, or separation from husband. The other half gave one of the following reasons: they were not interested, they wanted children, their husband was opposed, birth control was against

their religion, they had no time to attend the clinic, they did not like pills but never got anything else, or they were afraid of the side effects.

The percentage of women reporting the use of contraceptives increased slightly with parity.

Women with four or more children were reported to be the largest proportion (73 percent) using contraceptives at the time of the interview. Similarly, more than three-quarters of the women with the desired size of family were

Table 2. Marital status and age of mother at birth of baby, and marital status at time of interview

Characteristics	Total women		Marital status at birth of study baby				
	Number	Percent distribution	Married	Widowed	Divorced	Separated	Never married
Total.....	564	100.0	252	4	4	67	237
Age group (years) of mother at time study baby was born:							
10-14.....	11	2.0	0	0	0	0	11
15-19.....	192	34.0	53	1	0	3	135
20-24.....	173	30.7	88	0	0	18	67
25-29.....	101	17.9	61	1	2	21	16
30-34.....	53	9.4	35	0	1	10	7
35-39.....	27	4.8	14	0	0	12	1
40-44 ¹	7	1.2	1	2	1	3	0
Marital status at time of interview:							
Married.....	254	45.0	201	0	1	2	50
Widowed.....	6	1.1	1	4	0	1	0
Divorced.....	6	1.1	1	0	3	1	1
Separated.....	114	20.2	49	0	0	63	2
Never married.....	184	32.6	0	0	0	0	184

¹ Includes 1 woman 47 years old.

Table 3. Contraceptive use and marital status of mother at time of interview, number of living children at time of registration at birth control clinic, and desired family size

Characteristics	Total women	Never used contraceptives		Using contraceptives		Stopped using contraceptives	
		Number	Percent	Number	Percent	Number	Percent
Total.....	564	30	5.3	376	66.7	158	28.0
Marital status at time of interview:							
Married.....	254	7	2.7	181	71.3	66	26.0
Widowed.....	6	1	16.7	3	50.0	2	33.3
Divorced.....	6	0	0	3	50.0	3	50.0
Separated.....	114	8	7.0	69	60.5	37	32.5
Never married.....	184	14	7.6	120	65.2	50	27.2
Number of live children at registration at birth control clinic:							
1.....	143	9	6.3	82	57.3	52	36.4
2.....	119	8	6.7	80	67.2	31	26.1
3.....	92	3	3.3	61	66.3	28	30.4
4 or more.....	210	10	4.7	153	72.9	47	22.4
Desired family size:							
Too many.....	164	9	5.5	106	64.6	49	29.9
Just enough.....	163	11	6.7	126	77.3	26	16.0
Want more.....	221	9	4.1	132	59.7	80	36.2
Not known.....	16	1	6.2	12	75.0	3	18.8

using contraceptives when interviewed. Their use seemed to have no correlation with the woman's concept of family size except when she had the number of children she wanted (table 3).

Contraceptive Practice

A month-by-month retrospective history of contraceptive practice was obtained from each woman interviewed. This information was compiled to obtain months of use, months not needed because of separation from husband or because of surgery, months pregnant, and reasons for nonuse. Protection or retention rates were computed by using the life table method and following the same procedure used to compute mortality rates.

The 564 participants reported almost 13,000 woman-months of experience from time of registration at the birth control clinic to time of interview. Seventy percent of this time they were protected, 8 percent they did not need pro-

tection, 10 percent they were pregnant, and 12 percent they did not practice birth control. A total of 170 women reported pregnancies: 103 had full terms, 26 had miscarriages, and 41 were pregnant when interviewed.

More than half (306) of the women remained on contraceptives almost the entire period between registration at the clinic and the interview. The consistent use of birth control methods varied, depending on marital status and age. Women under 20 years old and those never married practiced birth control the least (table 4).

The following percentages of women practiced birth control consistently:

<i>Status of mother</i>	<i>Use (percent)</i>
Married at time of interview.....	61.4
Never married at time of interview.....	48.9
Under 20 years old when study baby was born...	46.3
20 to 29 years old when study baby was born....	59.8
30 years old or over when study baby was born..	55.2

Approximately 75 percent of the women selected the pill as their first choice when register-

Table 4. Contraceptive use and number of pregnancies between registration at birth control clinic and time of interview, by age of mother at birth of baby and marital status at time of interview

Characteristics	Total women	Used contraceptives entire time	Used contraceptives all but 1 to 3 months		Off contraceptives at least 4 months but not more than 50 percent of time		Off contraceptives 50 percent or more of the time		Never used contraceptives	
			Number of women	Number of pregnancies	Number of women	Number of pregnancies	Number of women	Number of pregnancies	Number of women	Number of pregnancies
Percent distribution.....	100.0	39.5	14.7	-----	15.3	-----	25.2	-----	5.3	-----
Total.....	564	223	83	3	86	49	142	107	30	11
Age group (years) of mother:										
10-14.....	11	3	2	0	1	1	5	3	0	0
15-19.....	192	59	30	2	30	18	58	49	15	7
20-24.....	173	82	26	0	28	15	33	26	4	2
25-29.....	101	43	13	0	17	7	26	21	2	0
30-34.....	53	25	7	1	6	5	10	5	5	2
35-39.....	27	9	5	0	3	2	9	3	1	0
40-44.....	7	2	0	0	1	1	1	0	1	0
Marital status at time of interview:										
Married.....	254	120	36	2	40	28	51	45	7	5
Widowed.....	6	2	1	0	0	0	2	0	1	0
Divorced.....	6	0	1	0	2	1	3	1	0	0
Separated.....	114	40	16	0	14	6	36	27	8	3
Never married.....	184	61	29	1	30	14	50	34	14	3

¹ Includes 1 woman 47 years old.

ing at the clinic, 7 percent selected the IUD (from November 1965), and 8 percent selected foam (table 5).

Measurements of Program Effectiveness

We employed three measures to determine the impact of the program on the sample population. Each measure had shortcomings, but each led us to the same conclusion, and together they provided a sound basis for judgment.

The pregnancy rate per 100 woman-years of exposure, developed by Pearl (2) in the early

1930's and since accepted by students of contraception, is defined as:

$$\frac{\text{total number of conceptions} \times 1,200}{\text{total months of exposure}}$$

We did not use this pregnancy rate to measure contraceptive failure because the reported pregnancies did not necessarily result from contraceptive failure during the period of observation. The duration of exposure to pregnancy (the denominator) was determined by deducting from the number of months that elapsed be-

Table 5. First contraceptive method used by mother after registering at birth control clinic, and marital status at birth of baby

First method used	Total women		Marital status at birth of baby				
	Number	Percent	Married	Widowed	Divorced	Separated	Never married
Total.....	564	100.0	252	4	4	67	237
Pills.....	420	74.5	187	3	3	48	179
Intrauterine device.....	38	6.7	21	0	0	3	14
Foam.....	47	8.3	26	0	0	8	13
All others and not reported.....	29	5.2	10	0	1	4	14
Nothing used.....	30	5.3	8	1	0	4	17

Table 6. Pregnancy rates per 100 woman-years, by age of mother at birth of baby, period of exposure, and parity

Characteristics	Total		Parity									
			1		2		3		4		5 and over	
	Rate	S.E. ¹	Rate	S.E.	Rate	S.E.	Rate	S.E.	Rate	S.E.	Rate	S.E.
Total.....	19.3	1.5	26.7	3.5	18.4	3.1	17.5	3.6	14.1	3.8	16.5	2.8
Age group (years) of mother:												
10-14.....	22.0	10.9	18.3	10.5			0	0	0	0	0	0
15-19.....	26.6	3.0	31.8	4.6	19.8	4.4	21.6	7.1			0	0
20-24.....	14.9	2.3	17.8	5.9	11.1	4.2	18.4	5.1	13.4	4.9	13.6	5.1
25-29.....	17.9	3.4			36.8	13.7	5.1	5.2	12.6	6.3	19.7	4.9
30-34.....	15.9	4.3	0	0							17.4	5.5
35-39.....	12.0	5.4	0	0							12.3	6.1
40-44 ²			0	0			0	0				
Period of exposure (months):												
12-17.....											0	0
18-23.....	16.3	1.8	22.9	4.0	17.5	4.2	14.2	4.4	9.7	4.0	12.7	3.1
24-29.....	22.5	2.5	32.5	6.7	16.2	4.7	18.2	4.9	23.9	8.4	23.0	4.9
30-36.....	21.2	8.5										

¹ S.E.=Standard error; figures were based on unbiased binomial estimator formula of Potter and Sagi (3).

² Includes 1 woman 47 years old.

NOTE: Leaders indicate less than 150 months of exposure; zeroes indicate no exposure time; italicized numbers indicate rate based on exposure time of 1,200 months or more.

tween registration at the birth control clinic and the time of interview the months during which conception was impossible because of pregnancy or separation from husband. An additional month was deducted to cover the puerperal period of pregnancy during the exposure period. Approximately 6 weeks elapsed between the birth of the study baby and registration at the clinic. Of the 170 pregnancies, only 50 could be considered a result of contraceptive failure, including those reported as occurring in the month immediately after the use of contraceptives was stopped and those occurring during the use of contraceptives.

We were aware of possible biases in the Pearl pregnancy rate, caused by differences in length

of observation period and effect of the post partum amenorrhea, but we believed that this index was a sufficiently good one for gauging the results of contraceptive use in this high-risk population. The period of observation excluded approximately 6 weeks or more between the birth of the study baby and registration of the mother at the birth control clinic. Standard errors were computed by using the unbiased binomial estimator formula of Potter and Sagi (3).

The Pearl pregnancy rate per 100 woman-years was 19.3 for our study population. Pregnancy rates for the population interviewed between 18 and 23 months after registering at the clinic was 16.3 compared with 22.5 for those

Table 7. Use effectiveness of contraceptives during first segment of use only

Months of use	On contraceptives at beginning of period	Losses			On contraceptives at end of study	Effective number	Monthly rate		Cumulative rate		Standard error
		Pregnancies ¹	Withdrawals	Total			Loss	Retention	Loss	Retention	
0-----	² 534	4	9	13	0	534.0	0.024	0.976	0.024	0.976	0.007
1-----	521	5	30	35	1	520.5	.067	.933	.090	.910	.012
2-----	485	5	25	30	0	485.0	.062	.938	.146	.854	.015
3-----	455	1	12	13	0	455.0	.029	.971	.171	.829	.016
4-----	442	4	8	12	0	442.0	.027	.973	.193	.807	.017
5-----	430	3	8	11	2	429.0	.026	.974	.214	.786	.018
6-----	417	1	8	9	2	416.0	.022	.978	.231	.769	.018
7-----	406	3	8	11	0	406.0	.027	.973	.252	.748	.019
8-----	395	1	3	4	1	394.5	.010	.990	.259	.741	.019
9-----	390	2	10	12	2	389.0	.031	.969	.282	.718	.020
10-----	376	5	9	14	0	376.0	.037	.963	.309	.691	.020
11-----	362	1	6	7	2	361.0	.019	.981	.322	.678	.020
12-----	353	1	7	8	4	351.0	.023	.977	.338	.662	.020
13-----	341	1	5	6	4	339.0	.018	.982	.350	.650	.021
14-----	331	1	2	3	0	331.0	.009	.991	.355	.645	.021
15-----	328	0	5	5	0	328.0	.015	.985	.365	.635	.021
16-----	323	1	3	4	1	322.5	.012	.988	.373	.627	.021
17-----	318	1	3	4	3	316.5	.013	.987	.381	.619	.021
18-----	311	1	3	4	5	308.5	.013	.987	.389	.611	.021
19-----	302	0	4	4	27	288.5	.014	.986	.398	.602	.021
20-----	271	0	2	2	41	250.5	.008	.992	.402	.598	.022
21-----	228	0	2	2	37	209.5	.010	.990	.408	.592	.022
22-----	189	1	0	1	51	163.5	.006	.994	.412	.588	.022
23-----	137	1	3	4	41	116.5	.034	.966	.432	.568	.023
24-----	92	1	0	1	24	80.0	.012	.988	.439	.561	.024
25-----	67	0	0	0	30	52.0	.000	1.000	.439	.561	.024
26-----	37	0	1	1	10	32.0	.031	.969	.457	.543	.024
27-----	26	0	0	0	10	22.0	.000	1.000	.457	.543	.024
28-----	16	0	0	0	7	13.5	.000	1.000	.457	.543	.024
29 or more--	9	0	0	0	9	5.5	.000	1.000	.457	.543	.024

¹ Includes only those women who reported a pregnancy the month immediately after stopping the use of contraceptives or who had an accidental pregnancy while on contraceptives.

² Excludes 30 women who registered but never used contraceptives.

interviewed between 24 and 29 months (table 6).

Cumulative dropout or retention rates also can be computed by summarizing month-to-month data by the life table method of Cutler and Ederer (4).

We prepared two life tables, one including only the first segment when contraceptives were used (table 7) and the other including all segments when contraceptives were used (table 8). (A segment is defined as a continuous period of months during which birth control was practiced.) Seventy-eight women stopped using contraceptives and then resumed the practice. A loss to the program was anyone who became

pregnant or reported the nonuse of a contraceptive during any month. We present these data with reservations because month-to-month recall is not always accurate for experiences that occurred 18 to 24 months before an interview.

Cumulative retention rates did not differ much whether only the first segment of use or more than the first segment was computed. At the end of four time periods the cumulative retention rates were as follows:

End of—	Rate first segment of use	Rate all segments of use
6 months-----	0.786	0.781
12 months-----	.678	.673
18 months-----	.619	.616
24 months-----	.568	.565

Table 8. Use effectiveness of contraceptives during all segments of use

Months of use	On contraceptives at beginning of period	Losses			On contraceptives at end of study	Effective number	Monthly rate		Cumulative rate		Standard error
		Pregnancies ¹	Withdrawals	Total			Loss	Retention	Loss	Retention	
0-----	² 617	7	12	19	4	615.0	0.031	0.969	0.031	0.969	0.007
1-----	594	6	35	41	8	590.0	.069	.931	.098	.902	.012
2-----	545	6	25	31	5	542.5	.057	.943	.150	.850	.014
3-----	509	1	12	13	6	506.0	.026	.974	.172	.828	.015
4-----	490	5	10	15	5	487.5	.031	.969	.197	.803	.016
5-----	470	4	9	13	5	467.5	.028	.972	.219	.781	.017
6-----	452	2	8	10	4	450.0	.022	.978	.237	.763	.017
7-----	438	3	9	12	6	435.0	.028	.972	.258	.742	.018
8-----	420	1	3	4	5	417.5	.010	.990	.265	.735	.018
9-----	411	1	13	14	7	407.5	.034	.966	.290	.710	.019
10-----	390	4	9	13	4	388.0	.034	.966	.314	.686	.019
11-----	373	1	6	7	4	371.0	.019	.981	.327	.673	.019
12-----	362	1	7	8	4	360.0	.022	.978	.342	.658	.020
13-----	350	1	5	6	5	347.5	.017	.983	.353	.647	.020
14-----	339	0	2	2	3	337.5	.006	.994	.357	.643	.020
15-----	334	1	5	6	1	333.5	.018	.982	.369	.631	.020
16-----	327	1	3	4	1	326.5	.012	.988	.376	.624	.020
17-----	322	1	3	4	4	320.0	.013	.987	.384	.616	.020
18-----	314	1	3	4	6	311.0	.013	.987	.392	.608	.020
19-----	304	0	4	4	27	290.5	.014	.986	.400	.600	.021
20-----	273	0	2	2	42	252.0	.008	.992	.405	.595	.021
21-----	229	0	2	2	38	210.0	.010	.990	.411	.589	.021
22-----	189	1	0	1	51	163.5	.006	.994	.414	.586	.021
23-----	137	1	3	4	41	116.5	.034	.966	.435	.565	.023
24-----	92	0	0	1	24	80.0	.012	.988	.442	.558	.023
25-----	67	0	0	0	30	52.0	.000	1.000	.442	.558	.023
26-----	37	0	1	1	10	32.0	.031	.969	.459	.541	.028
27-----	26	0	0	0	10	21.0	.000	1.000	.459	.541	.028
28-----	16	0	0	0	7	12.5	.000	1.000	.459	.541	.028
29 or more--	9	0	0	0	9	4.5	.000	1.000	.459	.541	.028

¹ Includes only those women who reported a pregnancy the month immediately after stopping the use of contraceptives or who had an accidental pregnancy while on contraceptives.

² 617 segments of use were reported, including 69 segments by 32 women who were off and on the same

contraceptive, 92 segments by 46 women who used different contraceptives but stopped between use, and 456 segments by 456 women who used contraceptives consistently; excludes 30 women who registered but never used contraceptives.

No matter which way the life tables were prepared, after 1 year the data showed that approximately two-thirds of the study population were still using contraceptives. At the end of the second year, 56 percent of the women were still protected. This 2-year rate was close to the 52 percent retention rate for nonwhite women observed by Westoff and Ryder (5). Their study was based on the use of oral contraceptives by married women living with their husbands between 1960 and 1965.

The third general measure for evaluating the program was reduction in number of pregnancies for the study group. We could make only a rough estimate of the expected number of pregnancies in the population studied. If one uses the 1965 U.S. birth probabilities by parity and 5-year age groups of the mother, the expected number of pregnancies (births adjusted for pregnancy wastage of 20 percent, reference 6) would be 300 during the period of observation for a population of 564 women with the same distribution of age and parity as the sample population. The 170 pregnancies observed during the time period covered by the study represents a reduction in births of 43 percent (table 9).

Fertility for nonwhite D.C. women was about 1.3 times that of all U.S. women (7). Adjusting the number of expected pregnancies by this factor, we found that the reduction in pregnancies

for this population for the period observed could be as high as 55 percent. The greatest reduction occurred in the age groups under 25 years and for second and fourth parities (table 9).

Summary

A population of 564 low-income nonwhite mothers from the District of Columbia, 45 percent of whom were married at the time their study baby was born, was evaluated by the District of Columbia Health Services Administration to determine, among other things, the extent of their continuing participation in a birth control program, the reduction in births because of the program, and why some women became dropouts from birth control.

The study population included mothers delivering a live baby at the District of Columbia General Hospital between November 1964 and December 1965. Nearly one-third of all resident newborns are delivered at this hospital, almost entirely to women from low-income Negro families.

The time interval covered by the study included almost 13,000 woman-months, during 70 percent of which the women practiced birth control. At the time of interviewing them, which usually averaged 2 years from registration at the birth control clinic, 376 or 67 percent of the 564 mothers were using contraceptives, 158 or

Table 9. Percent change of observed from expected pregnancies, by parity and age of mother at birth of baby

Age group (years) of mother	Total ¹	Parity				
		1	2	3	4	5 and over
Total.....	-43	-40	-51	-39	-52	-37
10-14.....	-50	-57	² 0			
15-19.....	-42	-34	-58	-36	+52	
20-24.....	-55	-54	-61	-44	-63	-57
25-29.....	-37		+54	² -74	-44	-42
30-34.....	-17			+44	² -42	-18
35-39.....	+5			² +257		-6
40-44.....	² +144					² +85

¹ Expected pregnancies were computed in the following way: 1965 birth probabilities for each age and parity group published by the National Center for Health Statistics (7a) were applied to months of exposure for the comparable group. These results were then divided by 0.8 to convert births into pregnancies. When an age-parity group probability was not published, the next age group for the same parity was used.

² Only 1 observed pregnancy.

NOTE: A minus sign indicates less births than expected; a plus sign, more births than expected; leaders indicate no months of observation or no pregnancies.

28 percent had at some time used contraceptives but were not then using anything, and 30 or 5 percent had never used a contraceptive method.

The Pearl pregnancy rate for the 564 participants was 19.3 per 100 woman-years. An estimated reduction of 55 percent in the number of expected births occurred in the study population for the period covered by the study.

The 158 women who no longer were using birth control methods had stopped for such reasons as being pregnant or because they were separated from their husbands, had surgery, became sick, gained weight, were nervous, or thought it too much trouble. Only one woman admitted losing track of the cycle for using contraceptive pills.

REFERENCES

- (1) Okada, L. M.: Use of matched pairs in evaluation of a birth control program. *Public Health Rep* 84: 445-450, May 1969.

- (2) Pearl, R.: Contraception and fertility in 2,000 women. *Hum Biol* 4: 363-497 (1932).
- (3) Potter, R. G., and Sagl, P. C.: Research in family planning. Princeton (N.J.) University Press, 1962, pp. 389-407.
- (4) Cutler, S. J., and Ederer, F.: Maximum utilization of life table method in analyzing survival. *J Chronic Dis* 8: 699-712 (1958).
- (5) Westoff, C. F., and Ryder, N. B.: Duration of use of oral contraception in the United States, 1960-65. *Public Health Rep* 83: 277-287, April 1968.
- (6) Anderson, G. W.: Current trends in pathology of human reproductive failure. *Amer J Public Health* 45: 1259-1266 (1955).
- (7) National Center for Health Statistics: Vital statistics of the United States, 1965. Vol. I. Natality. U.S. Government Printing Office, Washington, D.C., 1967, table 1-10; (a) table 1-14.

Tearsheet Requests

Biostatistics Division, District of Columbia Health Services Administration, 801 N. Capitol, NE., Washington, D.C. 20002

Study Effects of Noxious Pollutants Emitted by Federal Facilities

The National Air Pollution Control Administration (NAPCA) has entered into a \$45,000 contract with the National Academy of Sciences which will provide NAPCA with information on potential air pollution effects of noxious pollutants that may be emitted by Federal facilities.

NAPCA has been working with other Federal agencies for some time to assist them in controlling emissions of air pollution from their activities. The information received from the National Academy of Sciences in this study will enable NAPCA to provide still greater assistance to these agencies in their efforts to insure that their activities do not result in polluting the air of the communities where they are located.

Emphasis of the Academy studies during 1970 will be directed to effects of fumes from accidental spills of chemicals during transport, emissions of contaminants from rocket testing and launching, and nitrogen dioxide emissions from certain manufacturing operations.

The National Academy of Sciences' Advisory Center on Toxicology will provide NAPCA with guideline reports on these factors during 1970. The reports will cover health effects of short-term exposure (10 minutes to less than 24 hours), dose-response relationships, methods for measuring the atmospheric levels of the contaminants, suggested permissible levels of the pollutants involved, and identification of unusual susceptibility to the pollutants.